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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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|-----------------|-------------|----------------------|---------------------|------------------|

10/814,921

03/31/2004

John F. Vetelino

1-24954

6349

4859

7590

10/19/2005

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TOLEDO, OH 43604-1619

EXAMINER

AGUIRRECHEA, JAYDI A

ART UNIT

PAPER NUMBER

2834

DATE MAILED: 10/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/814,921

Applicant(s)

VETELINO, JOHN F.

Examiner

Jaydi A. Aguirrechea

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 and 18-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 and 18-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7/23/04.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims Applicant's election with traverse of Group I (Claims 1-14 and 18-22) in the reply filed on 7/26/05 is acknowledged. Arguments are persuasive, and Group II will be examined along with Group I. Claims 1-17 and 19-25 are pending in this application.

Drawings

2. The drawings are objected to because these are informal drawings; the lines, numbers and letters are not uniformly thick and well defined; and copy machine marks are not accepted. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities: in paragraph [0011] line 8, change "meaurand" for --measurand--. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Muller (US 4361026).

Muller discloses a method and apparatus for sensing fluids using acoustic waves comprising: a substrate formed from a piezoelectric crystal (quartz, lithium niobate or gallium arsenide), said substrate having a sensing surface (surface with electrodes) and a reference surface (surface without electrodes), said reference surface being opposite from said sensing surface, said sensing surface adapted to be immersed in an environment containing a measurand of interest (see columns 3 and 4), and a pair of electrodes (20, 22) deposited upon said substrate reference surface, said electrodes separated by a gap and operative to generate a lateral electric field therebetween, said lateral electric field inducing transverse shear mode acoustic wave

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within said substrate. Shear wave excitation at the planar surface is accomplished using lateral field excitation using electrodes 20 and 22.

With regards to claims 2 and 3, the piezoelectric crystal substrate is one of the group of quartz, langatate, langasite, langanite, lithium tantalate and lithium niobate. Specifically, Muller discloses the use of quartz or lithium niobate.

With regards to claim 4, Muller anticipates the invention showing a sensor having the substrate being formed of lithium niobate.

With regards to claim 5, Muller is silent with regards to the position of the electrodes with respect to the crystallographic axis of the substrate. However, it is inherent in the invention to form the electrodes parallel to the crystallographic x-axis in order to excite transverse shear mode acoustic waves.

With regards to claim 6, Muller discloses the electrodes formed from gold.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 7-16 and 23-25 rejected under 35 U.S.C. 103(a) as being unpatentable over Muller.

With regards to claim 7, Muller discloses an electrode made of gold. However, fails to disclose an adhesive layer formed from one of the group of chromium, zirconium and titanium disposed between the electrodes and the surface of the substrate. It is known in the art the use

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of electrodes having a double layer structure composed of a layer of an adhesive metal, such as chromium or titanium, and a second layer of a metal suitable for soldering or bonding with an external element, such as gold or copper.

Therefore, it would have been obvious at the time of the invention was made to use a double layer electrode to guarantee and assure the proper connection between the electrode and the surface.

With regards to claims 8-11, Muller is silent regarding the size of the gap between the electrodes and fails to disclose the specific values of the diameter and thickness of a circular shaped substrate.

It would have been obvious to one having ordinary skill in the art at the time of the invention was made to provide a gap between electrodes having a size of 1.0-4.0mm, and the thickness of the electrodes, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

It would have been an obvious matter of design choice to change the shape of the substrate, since the applicant has not disclosed that having a circular shape solves any problem or is for a particular reason. It appears that the claimed invention would perform equally well with the rectangular-shaped substrate disclosed by Muller.

With regards to claims 12-14, Muller discloses the sensor having a sensing member that changes an operative characteristic of the sensor, wherein such characteristic is the resonant frequency of the sensor.

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With regards to claims 15-16 and 23-25 the method of making the device is inherent in the device itself, and therefore, rejected under the same grounds as disclosed above.

With regards to claims 18-22, the same grounds of rejection applied to claims 1-14 apply as explained above.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See Pto-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jaydi A. Aguirrechea whose telephone number is 571-272-2018. The examiner can normally be reached on M-Th 9-7.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren E. Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


JAA
10/16/05


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